



UL 1248

Underwriters Laboratories Inc.
Standard for Safety

Engine-Generator Assemblies
for Use in Recreational
Vehicles

ULNORM.COM : Click to view the full PDF of UL 1248 2008



ULNORM.COM : Click to view the full PDF of UL 1248 2008

Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard for Safety for Engine-Generator Assemblies for Use in Recreational Vehicles, UL 1248

Third Edition, Dated December 8, 2006

Revisions: This Standard contains revisions through and including August 29, 2008

Summary of Topics

This revision to UL 1248 includes a correction to a typographical error in paragraph 23.4.

Text that has been changed in any manner is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The revisions dated August 29, 2008 include a reprinted title page (page 1) for this Standard.

The UL Foreword is no longer located within the UL Standard. For information concerning the use and application of the requirements contained in this Standard, the current version of the UL Foreword is located on ULStandardsInfoNet at: <http://ulstandardsinfo.net.ul.com/ulforeword.html>

The master for this Standard at UL's Northbrook Office is the official document insofar as it relates to a UL service and the compliance of a product with respect to the requirements for that product and service, or if there are questions regarding the accuracy of this Standard.

UL's Standards for Safety are copyrighted by UL. Neither a printed copy of a Standard, nor the distribution diskette for a Standard-on-Diskette and the file for the Standard on the distribution diskette should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

Revisions of UL Standards for Safety are issued from time to time. A UL Standard for Safety is current only if it incorporates the most recently adopted revisions.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

UL will attempt to answer support requests concerning electronic versions of its Standards. However, this support service is offered on a reasonable efforts basis only, and UL may not be able to resolve every support request. UL supports the electronic versions of its Standards only if they are used under the conditions and operating systems for which it is intended. UL's support policies may change from time-to-time without notification.

UL reserves the right to change the format, presentation, file types and formats, delivery methods and formats, and the like of both its printed and electronic Standards without prior notice.

Purchasers of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgement (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

If a single-user version electronic Standard was purchased, one copy of this Standard may be stored on the hard disk of a single personal computer, or on a single LAN file-server or the permanent storage device of a multiple-user computer in such a manner that this Standard may only be accessed by one user at a time and for which there is no possibility of multiple concurrent access.

If a multiple-user version electronic Standard was purchased, one copy of the Standard may be stored on a single LAN file-server, or on the permanent storage device of a multiple-user computer, or on an Intranet server. The number of concurrent users shall not exceed the number of users authorized.

Electronic Standards are intended for on-line use, such as for viewing the requirements of a Standard, conducting a word search, and the like. Only one copy of the Standard may be printed from each single-user version of an electronic Standard. Only one copy of the Standard may be printed for each authorized user of a multiple-user version of an electronic Standard. Because of differences in the computer/software/printer setup used by UL and those of electronic Standards purchasers, the printed copy obtained by a purchaser may not look exactly like the on-line screen view or the printed Standard.

An employee of an organization purchasing a UL Standard can make a copy of the page or pages being viewed for their own fair and/or practical internal use.

The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

Copyright © 2008 Underwriters Laboratories Inc.

This Standard consists of pages dated as shown in the following checklist:

Page	Date
1	August 29, 2008
2-45	December 8, 2006
46	August 29, 2008
47-58	December 8, 2006

ULNORM.COM : Click to view the full PDF of UL 1248 2008

No Text on This Page

ULNORM.COM : Click to view the full PDF of UL 1248 2008

DECEMBER 8, 2006

(Title Page Reprinted: August 29, 2008)

1

UL 1248

**Standard for Engine-Generator Assemblies for Use in Recreational
Vehicles**

First Edition – July, 1978

Second Edition – August, 1993

Third Edition

December 8, 2006

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Revisions of this Standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements. Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

COPYRIGHT © 2006, 2008 UNDERWRITERS LABORATORIES INC.

ULNORM.COM : Click to view the full PDF of UL 1248 2008

No Text on This Page

ULNORM.COM : Click to view the full PDF of UL 1248 2008

CONTENTS

INTRODUCTION

ALL UNITS

1	Scope	6
2	General	7
2.1	Units of measurement	7
2.2	Undated references	7
2.3	Terminology	7
3	Components	7
4	Instructions and Drawings	8

CONSTRUCTION

ALL UNITS

5	Protection Against Personal Injury	8
5.1	General	8
5.2	Enclosures and guards	9
5.3	Sharp edges	13
5.4	Provision for mounting	13
5.5	Temperature	13

MECHANICAL SYSTEM

6	Fuel Systems – Gasoline	14
6.1	Tanks and pumps	14
6.2	Fuel lines and fittings	14
6.3	Nonmetallic parts	15
6.4	Corrosion resistance	15
6.5	Carburetors	16
7	Fuel Systems – Liquefied Petroleum Gas	16
7.1	General	16
7.2	Containers	17
7.3	Gauges	18
7.4	Fuel lines and fittings	19
7.5	Vaporizers	20
7.6	Safety control and relief devices	20
7.7	Nonmetallic parts	21
7.8	Corrosion resistance	22
8	Exhaust System	22

ELECTRICAL SYSTEM

9	Enclosure	22
9.1	General	22
9.2	Battery compartment	26
10	Assembly	26
11	Wiring	27
11.1	Field connection	27

11.2	Wiring terminals and leads	28
11.3	Factory wiring	30
11.4	Internal high-voltage wiring	30
11.5	Separation of circuits	32
12	Electrical Components	33
12.1	Live parts	33
12.2	Electrical insulation	33
12.3	Insulation systems	34
12.4	Windings	34
12.5	Nonmetallic functional parts	34
12.6	Capacitors	35
12.7	Transformers and reactors	35
12.8	Resistors	35
12.9	Switches and controllers	35
12.10	Receptacles	35
13	Bonding for Grounding	36
13.1	Internal parts	36
13.2	Generator frame	38
14	Generator Protection	39
15	Generator Output Circuit Protection	39
15.1	Ground fault circuit interrupter	39
16	Spacings	39
16.1	General	39
16.2	Barriers and liners	41

PERFORMANCE

ALL UNITS

17	General	41
18	Test Installation	42
19	Instrumentation	42
20	Temperature Test	43

MECHANICAL SYSTEMS

21	Blocked Inlet Test	45
22	Backfire-Deflector Test	45
23	10-Day Moist Ammonia-Air Stress Cracking Test	46
24	Overspeed Test	47
25	LP-Gas Container Load Tests	47

ELECTRICAL SYSTEMS

26	Output Waveform Analysis	47
27	Variation in Output Voltage and Frequency Test	47
28	Dielectric Voltage Withstand Test	49
29	Overtemperature Protection	49
29.1	Maximum temperature test	49
29.2	Overload and endurance operation tests	50
29.3	Limited short circuit test	50
30	Overload Test	50
31	Rain Test	51

MANUFACTURING AND PRODUCTION TESTS

32 General54
33 Dielectric Voltage Withstand Test54
34 Generator Output Measurements54

MARKING

35 General55
36 Installation and Operating Instructions56
 36.1 Mechanical56
 36.2 Electrical57

ULNORM.COM : Click to view the full PDF of UL 1248 2008

INTRODUCTION

ALL UNITS

1 Scope

1.1 These requirements cover the fire and casualty aspects associated with the mechanical performance and the electrical features of engine driven generator assemblies intended for installation in recreational vehicles.

1.2 These requirements cover generators rated: 15 kilowatts or less, 115 volts, 2-wire single phase; 240 volts, 2-wire single phase; 115/230 volts, 3-wire single phase; 3 or 4 wire, any voltage, three phase. The generators may incorporate alternator or direct current generator sections for supplying energy to battery charging circuits. Only generators having systems voltages of less than 150 volts to ground are permitted for noncommercial applications.

1.3 These requirements cover both open and totally-enclosed generators.

1.4 A totally-enclosed generator is so enclosed as to prevent the free exchange of air between the inside and the outside of the enclosure for windings but not sufficiently enclosed as to be airtight.

1.5 A generator having ventilating openings that permit the passage of external cooling air over and around the windings is an open generator.

1.6 These requirements cover generator parts and combinations of such parts.

1.7 These requirements do not cover generators for use in hazardous locations as defined in the National Electrical Code.

1.8 These requirements cover only the identified hazard aspects of motor-generator assemblies intended for use with recreational vehicles. These requirements do not cover other possible hazard aspects of such equipment.

1.9 A product that contains features, characteristics, components, materials, or systems new or different from those in use when the standard was developed and that involves a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the level of safety for the user of the product as originally anticipated by the intent of this standard.